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ABSTRACT

The magnitude of the economic costs associated with the presence of foreign students in U.S. higher education and to what degree these costs are subsidized and by whom are discussed to help develop an appreciation for the rich, complex, and changing context of the U.S. higher education system. Five sections are: (1) foreign students and the changing economic context of U.S. higher education (foreign students do not represent a homogenous group, and the economic implications of different categories of foreign students may be changing in quite different ways and by very different magnitudes in the various diverse components of the U.S. higher education system); (2) the academic labor market, the demand for graduate students, and foreign supply (a decline in quality and graduate enrollments has adverse consequences for both instructional and research capabilities of universities, for graduate students are a relatively low cost source of academic labor, and the shift in demand for graduate students to lower-quality teaching oriented instructions, along with a relatively weak market for Ph.D.s, has reduced the supply of domestic graduate students and foreign students have become a critical source of high quality supply for U.S. graduate education); (3) undergraduate excess capacities, marginal costs, and prices (while foreign enrollments increased significantly, there were greater increases in the prices which reflected the true marginal or incremental costs associated with additional enrollment); (4) foreign demand for U.S. higher education (undergraduate foreign student demands are likely to respond to prices and institutional pricing policies then become especially significant); (5) and conclusion (foreign graduate and undergraduate students contribute significantly to the stabilization of the system). (SM)

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the economics of foreign students

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Introduction

Two interrelated questions provided the initial motivation for this essay: First, what is the magnitude of the economic costs associated with the presence of foreign students in the U.S. higher education system? Second, to what degree are these costs subsidized and by whom?

U.S. higher education, in general, is highly subsidized. Historically, subsidies to higher education derived primarily from private sources and were devoted to the establishment and maintenance of colleges serving specific parochial, generally religious, purposes. In the latter half of the nineteenth century, state governments, with encouragement of (but little fiscal support from) the federal government, became significant sources of subvention, motivated again by primarily parochial interests, thus focusing on the applied sciences and technologies relevant to state economies. These state subsidies generally took the form of appropriated support for public (state-sponsored) institutions, many of them highly specialized, e.g., the colleges of agriculture, mining, and technology. Since the second world war, federal subsidies have become significant, first in the form of GI Bill benefits to veterans (motivated by a concern for anticipated postwar unemployment), followed by rapidly growing federal support for academic research (motivated largely by the ostensible contributions of fundamental research to national security), and, finally, since the late 1950s, in the form of rapidly increasing direct assistance to students (largely motivated initially by perceived "shortages" of highly qualified labor, but justified increasingly on egalitarian grounds). While governmental support has increased dramatically over the past century, private eleemosynary contributions to institutions have served to underwrite a significant share of institutional costs, especially in the private or independent component of the system, while private support for university research, although dwarfed by public (primarily federal) support, has increased significantly, especially in those domains of apparent relevance to dynamically developing applied technologies.

Superficially, it might appear that, if the system as a whole is highly subsidized, then all students in the system must be highly subsidized. How-

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ever, the issue is, in fact, more complicated. To address the question of subsidies to a particular class of students, e.g., foreign nationals, it is necessary to determine the manner in which the sector would be affected were that class of students not to exist. In economic parlance, this "with or without" issue is one of "differential incidence analysis."

In these differential incidence terms, it is not at all clear that foreign students are highly subsidized. First, foreign students constitute a small, although growing, fraction of the aggregate student body. Institutions of higher education in the U.S. (with certain exceptions) do not derive their justification for existence from the educational services they provide to foreign students, and, in the first instance, the existence of these institutions would not be threatened by the disappearance of foreign students. Moreover, the resources consumed by these institutions would be only marginally reduced were foreign students to be removed from the system, especially in light of the pervasive excess capacities which have resulted from the transition of a highly inertial higher education system from rapid to low or negative growth.

Conversely, the "output" of the system, exclusive of that embodied in foreign students themselves, might well be significantly affected by the sudden disappearance of foreign students. Interestingly, however, that effect would be predominantly negative, as a result of the adverse consequences for the effectiveness of the research components of the system. Here, clearly, the important component of foreign enrollment is that of graduate students, who have constituted a rapidly rising share of the most capable, as the proportion of domestic students undertaking graduate study has contracted significantly in response to relatively adverse changes in the U.S. labor market. In the first instance, foreign students have served to sustain, at least partially, the vitality and productivity of the graduate schools. Moreover, because a significant fraction of foreign graduate students remains in the U.S., foreign Ph.D. recipients have constituted an increasingly important component of the flow into academic-scientific employment, especially in fields of particularly strong nonacademic demand, e.g., engineering, for which entré to nonacademic employment is relatively foreclosed to noncitizens as a result of immigration and national security restrictions.

In short, the economic implications of foreign students are not simplistically obvious. Rather, the identification of these implications requires an appreciation of the rich, complex, and changing context of the U.S. higher education system. The purpose of this paper is to contribute to the development of that appreciation.

Emphasizing this contextual appreciation, the paper is necessarily fundamentally "empirical." That empiricism, however, is not of the detailed, statistical variety. While reference is frequently made to specific developments, few descriptive statistics precisely measuring these developments are provided, simply because the precise magnitudes of change in key variables are not at the heart of the issues addressed here. Rather, the concern is with the substantive implications of broad patterns of development within U.S. higher education.

Many of the developments discussed are of significance entirely apart

from their consequences for the economic implications of foreign students. In some cases, this creates the appearance of a discussion and analysis which is irrelevant to the ostensible issue at hand. Ultimately, I believe, the relevance to the issue of foreign students is demonstrated, if only through the forced recognition of the fact that foreign students do not represent an easily isolated component of the system, but constitute, rather, a complexly integrated and diverse component, the implications of which can be understood only in context.

1. Foreign Students and the Changing Economic Context of U.S. Higher Education

A fundamental theme of this essay is that the economic implications of foreign students in U.S. institutions of higher education cannot be assessed independently of the broader economic context and status of the higher education sector. This broader context has undergone a succession of major, even radical, changes over the last two decades and confronts major further changes over the foreseeable future. As a result, the economic implications of foreign students, for institutions and for the system of higher education as a whole, have changed markedly.

A second major theme is that foreign students do not represent a homogeneous group, that the implications of foreign students of one type (identified, e.g., by level and field of study) are not identical to those of another type. Moreover, the economic implications of different categories of foreign students may be changing in quite different ways and by very different magnitudes in the various diverse components of the U.S. higher education system.

In summary terms, the following represent the major changes in the context of U.S. higher education which have served to alter the economic implications of at least particular categories of foreign students:

[1] *Enrollment.* After two decades of extremely rapid growth, undergirded by demographic and economic developments (the war and postwar baby boom and an expansion in demand for highly educated labor attributable to changes in the structure of economic activity), since the early 1970s the system-wide (domestic) enrollment growth rate has declined markedly, falling to or below zero in the 1980s. Because growth has continued in certain regions and segments of the system, institutions in other regions and segments have experienced absolute, in some cases substantial, enrollment contractions. For the system as a whole, absolute contraction will characterize the period from the early 1980s through the mid 1990s (in the absence of perverse developments, e.g., sustained high unemployment, which would serve to generate significant increases in enrollment rates of domestic students).[1]

[2] *Research support.* From the end of the second world war through the late 1960s federal support for academic research grew extremely rapidly,

[1]For analyses of the postwar growth of enrollment and of future prospects, see S. P. Dresch, "Demography, Technology and Higher Education," *Journal of Political Economy* (May/June 1975), and "Ability, Fertility and Educational Adaptation," *Research in Population Economics* (vol. 1, 1978).

facilitating the expansion of graduate programs.[2] Since the early 1970s, however, research support has stagnated or declined in real (inflation-adjusted) terms.

[3] *Academic labor market.* Reflecting the surge of enrollment and research support, the academic labor market was extremely buoyant through the late 1960s, as reflected in relative growth in faculty salaries, inducing rapid growth in graduate enrollments. As a result of the cessation of undergraduate enrollment growth and stagnation in support for university research, the academic-scientific labor market has been chronically depressed over the last fifteen years, resulting in declines in employment opportunities, in earnings of the employed, and in entry into and completion of advanced academic (as opposed to professional) degree programs.[3]

The consequences of these substantial contextual changes for the economic implications (costs and benefits) of foreign students can be similarly outlined in summary terms:

[1] *Depressed academic labor market, demand for graduate students and foreign supply.* Declines in graduate enrollment, in response to depressed academic-scientific labor markets, have led to shortages of graduate teaching and research assistants and to a deterioration in the "quality" of at least the more marginal domestic graduate students, creating very strong demands for capable foreign graduate students. In the case of fields (e.g., engineering) in which nonacademic demands for persons with lesser levels of training are particularly strong, the continued growth of undergraduate enrollment has resulted in substantial demands for faculty, while domestic students have been deterred from graduate education and faculty careers by the relative attractiveness of nonacademic employment, with the result that foreign students constitute the primary source of supply not only of graduate students but also of new faculty recruits, again with particularly important positive implications for quality. Not fortuitously, the supply of foreign graduate students (and, subsequently, faculty) to the academic system has been highly responsive.

[2] *Excess capacities, marginal costs, and price discrimination.* Declines in domestic undergraduate enrollment (except in a few high-demand fields such as engineering), conjoined with relatively fixed capacities (attributable to constraints on the ability of the sector to dispose of resources, especially faculty), have led to the emergence of substantial excess capacities. As a result, any augmentations of enrollment through the attraction of additional foreign students will entail relatively low marginal (or incremental) costs, marginal costs which will be substantially less than the average cost per student. As a result, opportunities will be created for institutions to utilize price discrimination (offer targeted price discounts) to profitably increase foreign enrollment, especially since foreign demands constitute a component of total demand which can be easily differentiated and segregated from

[2] The growth of research support and its interaction with enrollment growth in the expansion of graduate education is examined in S. P. Dresch, *An Economic Perspective on the Evolution of Graduate Education* (National Academy of Sciences, 1974).

[3] The boom and bust cycle in the academic labor market and its implications are examined in S.P. Dresch, "The Weakening of the Academic Labor Market and the Politicization of Academe," *PS* (Summer 1983).

domestic demand. Such price discrimination is facilitated when it is possible for the institution to negotiate with a third party concerning the education of some number of foreign students.

Appreciation of the implications of these developments for the economic impacts and functions of foreign students (the costs they impose and their contributions to the stabilization of the U.S. higher education system) requires further elaboration.

2. The Academic Labor Market, the Demand for Graduate Students, and Foreign Supply

The consequences of the "boom and bust" cycle characterizing U.S. higher education over the last third of a century were most immediately obvious in the academic labor market. A prolonged (fifteen year) period of sustained excess demand, of rising absolute and relative earnings, and of favorable career opportunities even for the less capable was quickly succeeded by a chronic state of excess supply, creating a situation in which even the more competent of successive aspirant cohorts found career opportunities to be foreclosed. Thus, an anomalous state of affairs emerged, in which relatively more competent aspirants to academic and scientific careers found their opportunities foreclosed by relatively less competent but entrenched members of predecessor cohorts; the high-growth cohorts of the 1950s and 1960s, protected by tenure and other constraints, would dominate the academic-scientific labor force through the late 1990s.

Even established members of the academic-scientific labor force felt the consequences of the deterioration in the market for the very highly educated, as real (inflation adjusted) salaries, after rising rapidly through the 1960s, began to decline after 1970. Thus, between 1970 and 1980 mean academic salaries (in dollars of constant purchasing power) declined by 20 percent; controlling for the rank distribution of faculty the decline was even more severe, on the order of 25 percent. However, these declines, in most fields, were insufficient to lead to substantial migrations out of academic employment (especially in the case of the less competent, whose nonacademic and nonscientific opportunities were least desirable), with the result that the employment impact of the deterioration of the market was concentrated at the entry level, with substantial proportions of new-Ph.D. cohorts confronting a foreclosure of academic-scientific employment opportunities.

As a result of this chronic saturation of the academic-scientific labor markets, the rate of entry of college graduates into graduate schools declined precipitously. While the consequences for degree production were delayed, as members of the final, inflated (and relatively less competent) graduate student cohorts completed their degrees (often prolonging their graduate study in the face of a relative paucity of employment opportunities), by the mid 1970s the absolute number of PhD degrees awarded began to decline significantly. By the early 1980s the number of doctoral degrees awarded in the major disciplines had declined to less than two-thirds the number awarded in the period around 1970. Moreover, while the capabilities of aspirants to medical, engineering, and business careers improved over

the course of the 1970s, those of the declining pool of academic-scientific aspirants and of established continuants in academic-scientific employment continued to deteriorate.

This decline in graduate enrollments and quality has distinctly adverse consequences for both instructional and research capabilities of universities. Both within and across fields, graduate programs can be differentiated in terms of the degree to which they provide a low-cost source of teaching versus research services. Thus, in the laboratory sciences, graduate students can augment the supply of either the teaching or research services of established faculty, with some programs emphasizing the former and others the latter. Emphasis on the teaching function is generally predominant in the graduate programs of universities and departments with large undergraduate enrollments, while the research function is predominant in the programs of the more selective, research-oriented universities, which tend to have smaller undergraduate programs. In fields not characterized by highly organized research, the teaching function tends to predominate.

Whether the emphasis in a particular institution is on instruction or research, graduate students represent a relatively low cost source of academic labor. Notwithstanding the nominally high "accounting" costs of graduate programs, the real costs may be quite low when the contributions of graduate students, to teaching and/or research, are considered.

This discrepancy between the apparent and real costs of graduate programs may be most pronounced in the case of programs in which graduate students provide substantial undergraduate instructional services. To take an arbitrary example, assume that, in a specific institution, there are eight graduate students per full-time-equivalent graduate faculty member and 16 undergraduate students per full-time-equivalent undergraduate faculty member. Under these circumstances, and restricting attention to costs of faculty (generally about two-thirds of total current instructional expenditure), it would appear superficially that graduate students entail approximately twice the costs of undergraduate students. However, if each graduate student serves as a teaching assistant and provides instructional services equal to one-quarter of those provided by full-time faculty, receiving a stipend equal to one-eighth of the salary of a full-time faculty member, then the university obtains services from eight graduate students equivalent to two full-time faculty members but pays the equivalent of the salary of one full-time faculty member, leaving a surplus equal to the faculty cost of the graduate program, i.e., the graduate program involves zero net costs for the university. While this example is highly stylized and ignores nonfaculty costs associated with graduate programs, it is indicative of the orders of magnitude of the benefits and costs of graduate programs to universities.

The instructional role of graduate students has been especially important in light of the strengthening of selected nonacademic markets for professionals in the mid and late 1970s. As undergraduate enrollments in fields such as engineering and business have burgeoned, growing shortages of faculty in these fields emerged. Thus, conditional on being able to attract graduate students, universities with graduate programs have been in a po-

sition to inrease their collective share of undergraduate enrollment in these fields.

While the contributions of graduate students in institutions emphasizing research are comparable to those observed in more instructionally oriented institutions, the stagnation of research support has led to a shift in the demand for graduate students from the former to the latter, just as the distribution in graduate demand has shifted from the more basic sciences to those technical-professional fields experiencing especially strong undergraduate demands. Because the more research-intensive graduate programs are generally of higher quality, lower quality programs have gained ground relative to those of higher quality, with potentially significant consequences for the qualitative character of the supply of graduate students (especially of the more capable prospective domestic graduate students) as well.

Because the shift in demand for graduate students from generally higher quality research-oriented institutions to lower quality teaching-oriented institutions has interacted with a relatively weak market for Ph.D.s to reduce the supply of capable domestic graduate students, foreign students have become a critical source of high-quality supply for U.S. graduate education. Fortunately, that supply has been generally highly elastic, as a result of the favorable opportunities available in the U.S. (more than in countries of origin), both at the level of advanced schooling and of postschooling employment. Oversimplifying only slightly, in light of the small number of foreign graduate students in the U.S. relative to the size of the international pool from which they are drawn, the only effective constraint on the number of capable foreign students is the capacity of graduate schools to provide subsistence support.

Significantly, however, because of the relatively high degree of substantive articulation in international scientific and technological education, notwithstanding major structural differences between educational systems, foreign entry into U.S. graduate education (especially in scientific and technical fields) has not been contingent upon completion of prebaccalaureate schooling in the U.S., and thus has not implied a simultaneous foreign exacerbation of excess domestic undergraduate demands in fields such as engineering.

Also, because of the greater range and desirability of nonacademic career opportunities confronting those relatively few U.S. nationals completing doctoral degrees, while these more desirable nonacademic alternatives are foreclosed to foreign nationals as a result of immigration and national security constraints, a disproportionate number of foreign Ph.D. recipients has elected to pursue academic careers, thus eventually contributing substantially to the alleviation of faculty shortages in high-demand fields.

In summary, over the course of the 1970s and 1980s foreign students have come to play an important market-stabilizing role, with reference to markets for both graduate education and academic faculty. This is especially apparent in fields such as engineering, in which foreign graduate students constitute a majority in many subdisciplines. Furthermore, this role of foreign

graduate students is likely to become even more significant over the next decade as the inflated entrant-faculty cohorts of the late 1950s and early 1960s begin to erode rapidly through death and retirement. At the least, in a progressively broader range of fields, an elastic supply of foreign graduate students should significantly dampen the amplitude of the cyclical upswing of the academic labor market.

3. Undergraduate Excess Capacities, Marginal Costs, and Prices

If the situation at the graduate level can be characterized as one of an effective academic demand for foreign graduate students confronting a highly elastic supply, at the undergraduate level significant excess capacities have emerged, implying a potentially highly elastic supply of educational opportunities, to both domestic and foreign students. However, sectoral rigidities have constrained the ability of institutions to confront potential applicants with prices appropriate to a situation of excess capacity. Thus, while foreign enrollments have increased significantly, even greater increases were the prices imposed which effectively reflected the true marginal or incremental costs associated with additional enrollment, simply because of the relative price-sensitivity of foreign undergraduate demands.

Excess capacities. Observed excess capacities have developed as a result of the stabilization of domestic college and university enrollment. However, these excess capacities have been magnified by (a) the nonuniformity of enrollment developments and (b) the relative immutability of educational inputs, especially of the stock of faculty.

Nonuniformity of enrollment changes has been especially pronounced in two dimensions, regional and disciplinary. While the college-age cohort nationally grew slowly through the 1970s to an early 1980s peak, with subsequent decline, this demographic pattern has not been regionally neutral. Rather, growth in certain areas, especially the South and West, has been conjoined with substantial declines in the North and East. Disciplinarily, major declines in the natural and social sciences, the humanities and selected professional fields, especially education, contrast with similarly significant increases in fields such as business and engineering.

These nonuniformities in enrollment change would have no significant consequences were it possible for academic institutions to dispose freely of resources and/or to transfer resources costlessly across institutions (e.g., geographically) or fields. Obviously, however, the primary academic resource, faculty, is not subject to either free disposal or costless transfer. One of the most notable characteristics of the academic sector is its relative labor intensity, specifically, the exceptionally high share of academic costs accounted for by faculty salaries. As a proportion of current costs, wages and salaries of all employees constitute in excess of three-quarters of academic costs, and faculty earnings account for at least 80 percent of all academic employee compensation. However, despite the conventional economic perspective to the contrary and in contrast to other sectors, employment and associated wages and salaries tend to be moving inflexibly downward.

Traditionally, labor input has been viewed by economists as a "variable" factor of production, subject to adjustment by the firm at will, even in the short term; correspondingly, the costs of labor constitute a "variable" cost. More recently, however, employment and labor compensation have been increasingly recognized by economists to include, in the short term and even in the intermediate term, a substantial "fixed" or only partially adjustable component. Thus, even large industrial firms are observed not fully adapting employment of production workers to substantial short-run contractions in levels of demand and output. This fixity is attributable to a number of factors, some "real" (e.g., costs associated with training of employees and administrative costs associated with contractions and expansions of employment), some simply the consequence of public policy (e.g., unemployment compensation financed through employer taxes which are sensitive to the claims experience of the employer's employees).

In the academic sector, these general tendencies toward downward inflexibility of employment and of associated wage and salary costs are magnified by specific faculty employment practices, especially the system of academic tenure. Under the tenure system, the faculty member, after an initial period of probationary employment, is given virtually inviolable employment security (tenure), with discharge only on the demonstration of gross non- or malfeasance or of "financial exigency" on the part of the institution (in which case tenure protections are only partially relaxed, with substantial constraints on the institution's capacity to discharge particular members of its faculty).

Even with reference to nontenured members of a university's faculty, the tenure system creates substantial short-term rigidities of employment. Thus, the pretenure probationary period generally consists of a sequence of two- or three-year contracts, with the requirement of at least one year's notification of a decision not to renew the faculty member's contract. In the event of a failure to award tenure, the faculty member is given an additional, terminal one- or two-year contract. Thus, the institution of tenure has given rise to a system of employment which is notable for the contraints placed on the capacity of the university to alter employment in response to short-, and to intermediate- and even to long-term changes in the level and composition of student demand.

Within the constraints of the tenure system, minor attempts have been made within institutions to transfer established faculty across fields (e.g., the training of redundant humanities or social sciences faculty to offer lower-level courses in computer science). However, these have been generally unsuccessful. Persons trained in one field frequently do not have the aptitudes and abilities required in another, while such diversions are resisted both by those whose transfer is desired (who view any possible move as an effective demotion from full membership in one field to less than full membership in another) and by established members of the destination field (who view those transferring into their field as less than fully qualified).

Transferrals across institutions also occur. However, these are necessarily voluntary; as a result of the deteriorating state of the academic labor market, the rate of these voluntary transfers between institutions has been greatly

reduced, and those movements which have occurred have generally been restricted to the most capable, those which the origin institution is most loath to lose.

Despite its potentially severe employment-rigidifying effect, the established tenure system has been justified historically by the ostensible necessity of protecting the "academic freedom" of the faculty member. In particular, it was argued to be necessary in order to protect the faculty member and, perhaps more importantly, the employing institution from attack by partisan or parochial political, social, and religious interests, purportedly in the interest of the unfettered search for knowledge and truth. More fundamentally, however, it has served to concentrate power within institutions in the hands of the (tenured) faculty, which collectively and virtually independently controls the award of tenure (not infrequently to ends contradictory to the ostensibly claimed protection of academic freedom).

Because, over the period of the development of the contemporary tenure system (the first half of the twentieth century), the academic sector experienced virtually continous, uninterrupted growth, employment security in the face of possible contractions of enrollment probably constituted a relatively minor objective of faculty, with the concentration of power in faculty hands constituting an end in itself. However, the fact that this was indeed a period of continuous growth resulted in the development of a specific institutionalization of faculty power which rendered the academic sector extremely dependent on the continuation of growth. In other words, had the tenure system evolved over a period of recurrent expansions and contractions, it is unlikely that institutions would have permitted the specific institutionalization to become as growth-dependent as the contemporary tenure system in fact is.

Due to the resultant inflexibility of academic employment, interregional and interfield differentials in enrollment growth and contraction have led to the emergence of excess capacity in some regions and fields, while strong demands have led to increased employment and expansion of capacity in others.

Marginal cost. In the case of contracting institutions or components of institutions, resources are obviously not entirely fixed. Thus,

—some fraction of the tenured faculty will die or retire. While the death and retirement rates are largely predetermined (by the age distribution of faculty, reflecting the historical trajectory of institutional growth), both death and retirement rates may respond at least slightly to changes in institutional circumstances. Thus, for example a deterioration in working conditions may lead to increases in death and retirement rates. Moreover, retirement rates may be at least somewhat amenable to manipulation by the institution, as in the case of "early-retirement" programs.

—some fraction of the faculty will not be protected by de jure or de facto tenure and thus will be subject to discharge by the institution in the face of contracting enrollment. This "flexible" proportion of the faculty will be a function of the prior pattern of institutional growth and of the degree to which institutions were able to effectively anticipate eventual enrollment

contraction and thus to alter tenure and related employment policies and practices in order to sustain future flexibility.

—nonfaculty resources, personnel and other, will be subject to some degree of reduction in the event of enrollment contraction. For example, redundant plant and equipment need not be maintained.

Of the foregoing sources of flexible downward adjustment of resources and costs, the second deserves particular note. While the tenure system, as discussed, severely constrains institutional flexibility with reference to both tenured and probationary (tenure-track) faculty, greater flexibility is obviously possible with reference to the latter than to the former. Thus, to the degree to which declines in enrollment demand are anticipated, and to the degree to which these anticipations lead to changes in tenure practice (as reflected in the proportion of tenure-eligible individuals actually granted tenure), the institution can increase its reliance on probationary relative to tenured faculty, discharging nontenured faculty at the conclusion of the probationary period and replacing them, if necessary, by new probationary recruits. While motivated by the desire to achieve greater future flexibility in the level and composition of the faculty, as a byproduct the institution could also use the reduced rate at which tenure is granted to upgrade academic standards for tenure and thus to improve the quality of faculty.

In fact, tenure practices, and especially rates at which probationary faculty are granted tenure, have not changed dramatically in the face of changing institutional enrollment prospects. A form of institutional inertia has served to sustain past patterns of practice. As a result, the ratio of tenured to probationary faculty has tended to increase significantly over the past decade and a half. The most compelling explanation for this institutional inertia is indeed the control of established (tenured) faculty over the tenure process. In effect, higher standards for tenure, if successful in raising quality of newly tenured faculty, would constitute a direct or indirect threat to those (on average less capable) who achieved tenure under earlier, less demanding, standards. While the primary threat might seem to be to the selfesteem of the less capable members of the tenured faculty, more substantial adverse consequences for this group might also be anticipated, e.g., relative reductions in salary increases and loss of internal power and authority.

While the tenure system imposes significant constraints on institutional flexibility in response to enrollment change and has not adapted positively to changes in growth prospects, one significant development in academic employment practice has emerged over this period which has given institutions substantial flexibility. This is the growing reliance on nonprobationary, nontenured employment. Here, individuals are appointed either to fixed-term, nonrenewable positions (the revolving one- or two-year appointment), to indefinite term but non-tenure-eligible positions (as instructors or lecturers), or to casual or part-time positions. As a result, the downward adaptability of employment is substantially greater now than in the past and is notably more adaptable than the constraints of a relatively static tenure system might suggest. Thus, while the tenured proportion of tenure-eligible

faculty has risen, the tenured and tenure-eligible proportion of all faculty has declined.

In light of faculty resistance to changes in tenure practices which would increase institutional flexibility, one might question why faculty have been prepared to accept the substantial growth in the non-tenure-eligible faculty underclass. The apparent explanation, however, is quite consistent with that of faculty resistance to modifications in tenure practice. Specifically, the emergent underclass does not constitute a threat to established faculty. Especially in light of the fact that persons willing to consider positions without prospects or security will be those least capable of securing positions with either of these attributes, it can be concluded that they will be among the less capable. As such, they constitute no threat to the permanent faculty; in fact, as a result of their relatively modest cost, by comparison to fully qualified and recognized faculty, they may generate an economic surplus, at least part of which may be capturable by the permanent faculty. If nothing else, this group provides indirect benefits to the established faculty as a group by relieving it of responsibility for the less desirable lower division and service curriculum. Unfortunately, as in the case of its resistance to elevated standards for tenure, the established faculty may well, again, contribute to the effective reduction in faculty (and educational) quality.

In addition to the emergence of a faculty underclass which can be flexibly expanded and contracted in response to enrollment changes, one class of institutions, those with substantial graduate programs, have access to another source of a flexibly adaptable supply of faculty services, graduate students. On the assumption that graduate enrollment can be modified at will, i.e., that there is a sufficiently elastic supply of graduate students, relatively heavy reliance on the teaching services of graduate students will be reflected in relatively elastic institutional supply of undergraduate education. Holding quality constant, the depressed state of the academic-scientific labor markets clearly served to reduce the domestic supply of graduate students. However, a decline in supply of graduate students (demand for graduate education) of any given level of quality can be accommodated in quantitative terms by reducing standards. Moreover, reductions in quality standards for admission to graduate programs probably have lesser or less immediately visible adverse consequences when the primary function of the graduate student is teaching as opposed to research.

As has been discussed, while the domestic supply of graduate students of any quality has contracted, in a number of fields, foreign graduate students have provided a relatively more elastic source of supply. Thus, declines in graduate student quality have been moderated by shifts in the composition of the graduate student population toward foreign students. However, in light of the differential implications of quality in research- versus teaching-oriented graduate programs, and even of differences in the meaning of quality in these two types of programs (e.g., greater emphasis on English-language proficiency in predominantly teaching programs), the beneficial implications of expanded foreign graduate enrollments for quality of graduate students has probably been less pronounced in predominantly teaching-oriented institutions.

Together, the emergent and rapidly growing underclass of disenfranchised part-time and temporary faculty and a graduate student cadre which augments the instructional capacities of universities have permitted at least some adaptation of academic resources to contracting enrollment demands. This flexibility is important because of its implications for institutional costs, specifically for the marginal or incremental cost of an additional student, a cost which has substantial relevance for optimal institutional pricing.

If resources were fully and instantaneously adaptable to reduced levels of enrollment, then the marginal (incremental, additional) costs of an additional student would be approximately equal to average costs; a failure of the institution to secure additional revenue (through charges to the student or through incremental revenue from some third party, e.g., the state) at least equal to this average cost would imply a deterioration in the financial status of the institution. In contrast, were resources entirely frozen at peak levels, then the costs of additional students, up to the number required to return to peak enrollment levels and thus to fully utilize existing resources, would be zero, i.e., the incremental or marginal student would entail zero incremental or marginal resources and costs; under these circumstances, any positive revenue gain associated with an additional student, no matter how slight (and no matter how much less than prevailing charges) will represent a net improvement in the institution's financial condition.

Reality, obviously, lies between these extremes. To some degree, resources can be disposed of in the event of enrollment decline, although the relative reduction in resources and costs will be less than proportionate to the reduction in enrollment. The critical issue is the effective "factor of proportionality," or "elasticity," of costs (resource utilization) with respect to enrollment, i.e., the percentage change in costs associated with a one percent change in enrollment.

The issue of this elasticity is complicated somewhat by the need to distinguish between two possibly quite different elasticities, that of real resources and of costs. Thus, for example, with heavy reliance on nontenured and non-tenure-eligible faculty, a university might be able to reduce its total teaching faculty proportionately with reductions in enrollment. However, if the mean earnings of this downward-flexible faculty underclass are substantially lower than the mean earnings of the inflexible tenured or tenure-track category of faculty, then the proportionate reduction in costs will be substantially less.*

*To indicate the potential magnitude of the discrepancy between the elasticity of resources and of costs, consider the following hypothetical: Assume that the flexible faculty category accounts for one half of all faculty but enjoys earnings only one-half as great as those of the inflexible (tenured) category; of aggregate earnings, the flexible category will account for only one-third. Under these circumstances, a 25 percent decline in total faculty (a 50 percent decline in the flexible component), in response to a 25 percent decline in enrollment, would imply only a 16.67 percent decline in aggregate faculty compensation, for an elasticity of compensation with respect to enrollment of 0.67, in contrast to the unitary elasticity of resource utilization with respect to enrollment; alternatively, if a 25 percent reduction in total enrollment permitted only a 12.5 percent contraction in total faculty (implying discharge of 25 percent of the flexible component of faculty), then aggregate faculty compensation would decline only by 8.33 percent, and a real resource elasticity of 0.5 would be in contrast to an expenditure elasticity of 0.33. Actual discrepancies are probably even greater, with non-tenure-eligible faculty earning only one-half as much as nontenured but tenure-eligible faculty, who in turn earn only two-thirds as much as tenured faculty. In any event, the essential point is that the elasticity of employment (measured in persons) will be substantially greater than the elasticity of costs.

Many would argue that relative earnings of different categories of faculty in fact mirror relative effectiveness (productivity), i.e., that the non-tenure-eligible faculty member receiving a salary one-half that of a tenured or tenure-eligible faculty member is the real-resource-equivalent of only one-half of his tenured (or tenure-eligible) counterpart; therefore, measuring resources in productivity units, the elasticity of resources would be identical to the elasticity of costs.*

If all relevant labor markets were in equilibrium, then the foregoing argument would carry substantial weight. However, there is substantial evidence in support of the contention that the academic labor markets are not in equilibrium, most notably the finding that, even controlling for institutional quality and faculty rank, interinstitutional earnings differentials widened substantially over the course of the 1970s, especially at lower ranks, while labor market equilibrium would imply the absence of these interinstitutional differences (apart from minor differences associated with differences in qualitative characteristics of employment).[4] The inescapable conclusion is that earnings of tenured and tenure-eligible faculty have been (and almost undoubtedly remain) substantially above their equilibrium levels. In contrast, earnings of the non-tenure-eligible faculty underclass probably do not significantly exceed earnings in the next-best-alternative (nonacademic) employment available to these persons. Under these circumstances, relative earnings differences greatly overstate associated efficiency (real resource) differences, implying that the elasticity of resources will indeed be substantially greater than the elasticity of costs.

While relatively few studies are available which provide or on which to base estimates of resource and cost (institutional expenditure) elasticities with respect to enrollment, in an earlier study a short- to intermediate-term elasticity of the major categories of institutional costs (instructional, support, and auxiliary) of 0.5 was demonstrated to be reasonable in the case of enrollment contractions.[5] Given an estimate of the elasticity of costs with respect to enrollment, marginal costs are relatively easily determined, equal approximately to the product of average cost (total cost divided by enrollment) and the enrollment elasticity of costs. Thus, if the cost elasticity is 0.5, then marginal costs will be approximately equal to one half of average costs. In the short to intermediate term, e.g., over a period equal to perhaps one-half of the working lifetime of the representative faculty member, a stipulation of an elasticity of 0.5, implying a ratio of marginal to average costs of one-half, would appear not only reasonable but even conservatively high. Clearly, circumstances (characterized primarily by high ratios of tenured

*In the example provided in the foregoing footnote, a 25 percent reduction in enrollment would require a 25 percent reduction in resources; but because in efficiency terms the non-tenure-eligible faculty constitute only one-third of total faculty, in contrast to their 50 percent share of headcount faculty, a 75 percent reduction in the head count employment of this group would be required, implying a 25 percent reduction in costs. Thus, the efficiency-adjusted and cost elasticities would be identical.

[4]This disequilibrium in the academic labor market is identified and analyzed in Stephen P. Dresch, "The Weakening of the Academic Labor Market and the Politicization of Academe," *PS* (Summer 1983).

[5]See Stephen P. Dresch and Adair L. Waldenberg, "ERES: Disaggregated Simulations of Enrollment and Financial Prospects for American Higher Education, 1982 to 1988," in L. D. Andrew et al., eds., *Research in Postsecondary Education: Utilization of HEGIS and Other National Data Bases* (Blacksburg, Va.: VPI&SU, 1982).

to total faculty) can be imagined under which a short-term elasticity very close to zero would be observed, implying marginal costs also in the vicinity of zero.

Of course, even in an institution which has experienced a significant decline in enrollment and for which marginal costs are generally very low, enrollment in certain high-demand fields may be at or above "capacity." In such strong-demand fields, marginal costs will be substantially higher, possibly significantly above average costs. However, outside of these unusual fields, costs incurred as a result of additional students will be only a fraction of observed average costs.

Prices and price discrimination. With extremely low marginal costs, an additional student, unless he enrolls in a field of especially strong demand, does not impose significant costs upon the institution; whatever revenue might be associated with this marginal student represents essentially a net improvement in the financial status of the institution.

Under these circumstances, one would expect to see substantial downward pressure on prices (tuition and fees). Superficially, the existence of several thousand institutions of higher education might appear to give rise to atomistic competition, with prices at (or tending toward) marginal cost. No institution would have reason to consider the impact of a change in its price on the demand confronting and prices charged by competing institutions. Thus, although the sector as a whole might confront relatively price-inelastic (nonresponsive) demand, demand confronting the individual institution would be highly price responsive, as students move toward institutions which reduce prices, creating incentives for institutions to move prices toward marginal costs. However, while extremely low marginal costs may have exerted some pressure toward price reductions, the structure of the higher education sector has served to severely constrain the degree of effective price competition, with the result that very low marginal costs have not induced price reductions.

This relative absence of price competition can be traced to the only superficial appearance of atomistic competition in a market consisting of a large number of competing institutions. In reality, the higher education market can be decomposed into a number of smaller, relatively insulated segments; each segment includes, generally, a small number of very closely competing institutions, each of which does indeed recognize the impacts of its actions on its competitors and the likely responses of these competitors, modifying its price setting behavior accordingly.

This characterization of the higher education market as decomposable into relatively small segments of closely (and selfconsciously) competing institutions is especially descriptive in the regional and quality dimensions. At the highest quality level, there is a clear national market in which a very small number of institutions compete, each of which clearly recognizes the impacts of its actions on others and vice versa. At lower quality levels, the market becomes decomposed geographically, with relatively few students traveling any significant distance to school but with most students enjoying a choice between a small number of relatively comparable institutions.

Under these circumstances, any institution undertaking a general reduc-

tion in its tuition and fees is more likely to experience a reduction than an increase in revenues. On the one hand, the reduction is likely to be matched by other closely competing institutions (generally geographically proximate, except at the highest quality level), with the result that relatively few additional students will be attracted. On the other, the price reduction will apply not only to this small or nonexistent group of additional students attracted but also to those who would have been enrolled in any event. Thus, the net effect for institutional revenue is likely to be negative.

Viewing the individual institution in isolation, this is, essentially, a case of a kinked oligopoly demand curve, in which the firm (university) anticipates that competing firms will match price reductions but will not follow price increases, serving to freeze the existing structure of prices. In reality, in the academic market (in which firms have been effectively exempted from anti-trust constraints), it is probably inappropriate to consider the individual firm in isolation; rather, all members of the closely competing group can be expected to act in concert (collude) in determining prices. However, the relative inelasticity of the aggregate demand confronting the group will give rise to a relatively low marginal revenue (even for the group as a whole, the number of students attracted by a price reduction will be small, while the revenue loss attributable to the reduction in prices for students who would have been in attendance in any event will be large), leading to only modest downward price reductions in response to enrollment contraction and consequent declines in marginal costs.

Under these circumstances, prices confronting students need not decline, notwithstanding the relatively low marginal cost associated with an additional student. The fact remains, however, that the effective economic cost of an additional student, the marginal cost, is extremely low.

If it were possible for the institution (or the closely competing and collusive group of institutions) to offer price reductions only to prospective students who would not have been attracted at current prices, this would be an extremely attractive option. The barrier to such price discrimination, however, is the difficulty of segregating students into identifiable classes defined in terms of likely responses to alternative prospective prices. Even if these discrete classes of students were identifiable, there would remain the problem of justifying significant price differentials.

The latter difficulty, justification of price differentials, is alleviated somewhat by the existence of established mechanisms for academic price discrimination, specifically, scholarships and other forms of financial assistance. While debates occasionally arise concerning specific uses of these mechanisms, (e.g., the awarding of non-need-based scholarships to the highly able, designed to influence their institutional choice), the principle of their justifiability is rarely raised.

The prospects for effective and unchallenged price discrimination with reference to foreign students are especially favorable. First, foreign students constitute an easily identified group, the membership of which is not susceptible to manipulation in response to price differentials.* Second, except

* In principle, one can imagine that a domestic student might attempt to present himself as of foreign origin (either fraudulently or via actual emigration) in order to obtain preferential access to (a lower price for)

in those few institutions in which ex ante representation of foreign students is especially great, the revenue loss accompanying a differentially lower price for foreign students, due to the reduction for those who would have been enrolled in any event, would be modest. Third, political, cultural, and philosophical justifications can be offered for price discrimination favoring foreign students.

The desirability and success (from the vantage point of the institution) of a policy of price discrimination favoring foreign students depends, ultimately, on a foreign student demand which is relatively price elastic, specifically, more price elastic than the demands of domestic students. While, all else equal, foreign and domestic student demands may be comparably price elastic, if the effective elasticity of domestic student demand confronting a given institution is significantly reduced by the probable responses of other competing institutions to a change in the given institution's price, but if this is not the case with reference to foreign student demand, then the elasticity confronted by the institution may be greater for foreign than for domestic students. In fact, the availability of global as well as national as opposed to regional (U.S.) alternatives would be expected to give rise to a more price elastic demand on the part of foreign students.

Even in an instituiion in which foreign student enrollments are low prior to the introduction of favorable price discrimination, and especially in those with high ex ante foreign student enrollment, the introduction of price discrimination favoring all foreign students as a class will entail revenue losses on account of foreign students who would have enrolled even at the higher (regular) price. While price discrimination in favor of foreign students may be justified nonetheless, if the revenue gain resulting from the enrollment of additional students outweighs the loss on the preexisting base of foreign students, even greater revenue gains could be achieved if differentially lower prices could be targeted only on foreign students who would not have enrolled at the higher price.

An obvious focus for selective price concessions for foreign students is that component of foreign student represented by third parties, e.g., religious organizations and governmental agencies, U.S. or foreign. Here, it is possible for the institution to enter into agreements involving significant numbers of students, offering what amounts to a quantity discount to the intermediary agency, with effective certainty that the students involved would not have been in attendance at the prevailing, nonnegotiated price (current nominal tuition and fees).

In these third-party agreements, price is effectively indeterminate. For the institution, it is only necessary for price to be at or above marginal cost, while for the contracting agency, the prevailing nonnegotiated price becomes an effective ceiling, above which it is unnecessary to pay (since the agency could simply permit the student to attend as an individual, paying the prevailing price). In fact, the position of the third-party agency is likely to be stronger than that of the institution, since it has available a relatively large

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higher education, just as a few nonminority individuals attempted to present themselves as members of minority groups to obtain preferential access to employment (as a result of affirmative action programs of some employers); however, this would not be expected to be a significant phenomenon in fact.

number of quite similar institutions with which it might contract, suggesting that the negotiated prices are likely to be very close to marginal costs.

Thus, from the point of view of the institution, very little is likely to be gained financially from such negotiated, third party agreements, although, conversely, nothing will have been lost, and nonfinancial benefits may be significant. It might be argued that those students, domestic and foreign, attending as individuals and paying posted prices are effectively subsidizing the educations of those students attending under the terms of these third-party agreements, with their lower effective prices. This, however, would be an incorrect assessment, in that (a) the preferential prices imposed on the third-party sponsored students would be sufficient to cover all incremental costs associated with their attendance, while (b) the higher posted prices confronting nonsponsored students would not be lower were there to be no preferential third party agreement.

Whether the target is the individual foreign student or a third party representing some larger contingent of foreign students, the effectiveness with which an institution pursues a policy of price discrimination designed to maximize revenue at any level of enrollment, of either domestic or foreign students, will obviously depend upon the capacities of its student recruitment and financial assistance staffs to accurately gauge (perhaps intuit) the "reservation prices" of specific potential students and on the capacity of the institution at large (and especially of its senior officials) to develop sufficiently compelling public rationales for the resultant price differences. The first objective here is to identify that effective price above which the individual student would elect not to attend the institution. The second, then, is to neutralize adverse reactions to these price concessions especially on the part of those not receiving concessions, for whom the concessions must be justified. Unfortunately, it is probably not sufficient to demonstrate that less favored students have not been injured by, and may indeed have benefited indirectly from, the preferential terms of access provided to others.

It should be noted here that the barriers to the pursuit of an effective policy of price discrimination are probably greater for public than for private institutions. First, public institutions operate subject to more rigid and confining rules and regulations, legislatively and administratively mandated. While the fungibility of funds generally renders ostensible constraints ineffective, more or less tortuous and circuitous devices may be necessary to maintain the appearance of conformity, as when an institution is forced to utilize a putatively "independent" entity which it controls to "subsidize" those students to which it wants to offer price concessions. Secondly, the policies of a public institution will be subject to scrutiny not only by its students but also by politicians and public officials, to whom nominally aggrieved students may turn for support. While major contributors may perform a similar function in the case of private institutions, these will generally be more amenable to persuasion on social, cultural, and political grounds than will state politicians, whose perceptions of issues in the domain of higher education tend to be highly pragmatic and utilitarian, mirroring the perceptions of the majority of their constituents.

4. Foreign Demand for U.S. Higher Education

Achievement of optimal institutional pricing (a price structure which maximizes "profits" or minimizes "losses," however profits are utilized or losses recovered) is significant with reference to foreign student enrollment only to the degree to which foreign demand is price-sensitive, i.e., to which foreign enrollment in fact responds to changes in prices. Thus, it is necessary to address, at least briefly, the issue of foreign demands for U.S. higher education.

A major issue here concerns the degree of likely correspondence between foreign and domestic demands for higher education. In the face of temporal changes in the level and composition of domestic demand and of less than instantaneously adaptable supply, the implications of foreign demand will depend critically on the degree to which changes in these foreign demands parallel changes in domestic demands. If foreign demands, by field, level, and institution, move in tandem with domestic demands, then foreign demands will appear to be procyclical, exacerbating shortages and surpluses in the U.S. higher education system. Conversely, if foreign demands are uncorrelated or, even, highly negatively correlated with U.S. demands, then these foreign demands will play a potentially significant stabilizing or countercyclical role, serving as a source of demand for what would otherwise be excess academic capacity.

Note that the relevant issue with reference to the procyclical versus countercyclical impact of foreign student demand, whatever the economic implications of either, concerns *changes* in the level and composition of demand, not the level or composition per se. Thus, the overall distributions of foreign and domestic student demands over levels and fields of study might be quite similar, but if changes in these distributions are uncorrelated or negatively correlated, then foreign student demands will be countercyclical.

With reference to graduate education, examined in Section 2 above, it was argued that it is most appropriate to conceive of an academic demand for graduate students and of a corresponding foreign supply of graduate students. Moreover, it was argued that, because of the relative desirability of U.S. opportunities for advanced study and subsequent careers, this foreign supply is likely to be highly elastic; without incurring a significant quality penalty, U.S. graduate schools can increase foreign enrollment more or less at will, at least in the internationalized scientific and technical fields.

The important points to note with reference to graduate education are that (a) as a result of the relative degree of articulation between educational systems, graduate study in the U.S. does not necessitate undergraduate study in the U.S., and (b) foreign graduate students will be largely oriented to postgraduate careers in the U.S., but these careers will be pursued disproportionately in the academic sector. Thus, while foreign graduate students will be generally drawn to fields of high domestic demand, these foreign graduate students will not compete directly with domestic undergraduates for resources; in fact, given the contribution of graduate students to undergraduate capacity and supply, foreign graduate students will in fact

serve to enlarge opportunities for domestic undergraduates in high demand fields, an effect which will be reinforced as these foreign students complete their graduate degrees and enter an academic labor market generally shunned by domestic students.

At the undergraduate level foreign students may well compete with domestic students for educational opportunities in fields of particularly high demand. This will result if either (a) foreign undergraduates aspire to eventual permanent residency in the U.S., in which case their educational decisions will be influenced by the same labor market forces impinging on domestic students (drawing them into high-reward fields) or (b) relative labor market incentives are similar in the country of origin (and eventual return) to those prevailing in the U.S.

Foreign students desiring to pursue careers in the U.S. after completing baccalaureate degrees will be likely not only to exhibit baccalaureate field choices similar to those of domestic students but also to be particularly intent on pursuing their collegiate schooling in the U.S., simply because of the relatively high degree of intranational articulation between educational and employment systems. While these articulations between the educational and employment systems are less rigid and confining in the U.S. than in many other countries, it will still be the case that foreign students attracted by strong U.S. labor market demands for persons trained in particular fields will have an incentive to complete at least the later stages of education and training in the U.S., thus exacerbating shortages of educational capacity in high demand fields.*

While the demands of prospective immigrants on the U.S. higher education system are likely to be highly correlated with those of domestic students, barriers to immigration serve to render this a relatively insignificant component of foreign undergraduate demands. At the undergraduate level foreign students are most likely to anticipate return to the country of origin on completion of schooling. In this case, relative labor market demands in the country of origin, not in the U.S., will influence schooling decisions of foreign students.

The degree of correlation between demands of domestic students and those of foreign students anticipating return to home countries will depend upon the degree of synchronization between economic (and labor market) developments in the U.S. and other countries. Clearly, national economies are interlinked through international trade and factor (labor and, especially, capital) flows. The degree to which developments in one economy parallel those in the world economy will depend, inter alia, on the degree to which that economy is integrated into the global economy. Essentially, this degree of integration can be measured by the proportion of the country's economic activity which is accounted for by internationally traded goods and services, adjusted for the degree of insulation of domestic from world markets. Thus, for example, a subsistence agricultural sector, involving primarily nonmarket activity or only very localized markets, will not be highly affected by (in fact,

*It is for this reason that foreign graduate students attracted to the U.S. academic labor market have a greater incentive to complete graduate than undergraduate education in the U.S. This reflects the greater international articulations between educational systems than between employment systems.

will be largely independent of) developments in the world economy, while manufacturing sectors will be likely to be very directly influenced by global economic developments. Even in developing countries, the primary source of foreign students, whose economies include major components insulated from global economic developments, the demand for highly educated labor will be driven by the more advanced segments of the economy, which are highly integrated with the international economy. This means, then, that cyclical developments influencing the aggregate demand for education and the composition of that demand will tend to be highly correlated across countries, including the less developed. In this context, differences in the precise time-phasing of cycles in different countries will constitute the only possible source of acyclical or countercyclical movements in foreign student demands.

Yet the impact of economic cycles on educational demand may be somewhat different in a developed country like the United States and in developing countries. This is suggested by the very different effects of economic expansion and contraction on the perceived costs of and capacity to finance education on the part of U.S. and foreign students. For U.S. students, especially in light of substantial institutional and student subsidies, the most significant component of the cost of schooling is foregone earnings. In contrast, "out-of-pocket" costs (tuition, fees, living expenses abroad, etc.) are much more substantial and are likely to predominate in the decisions to seek or forego education abroad. For U.S. students, the contraction phase of the economic cycle means declines in foregone earnings; thus, ceteris paribus, enrollment rates and the aggregate level of domestic educational demand will tend to decline with economic expansion. Conversely, in the case of foreign students, the effects of economic expansion and contraction on the capacity to finance out-of-pocket costs are likely to be most important, and these effects will move cyclically in the opposite direction: Family income and wealth are likely to constitute a primary determinant of the capacity to finance foreign study, but this source of funding is likely to contract in an economic recession. Insofar, then, as cyclical economic developments have any influence on the structure of educational demand, the cycle-related changes are likely to introduce a countercyclical force to foreign student demand.

This relatively greater importance of out-of-pocket costs (tuition, fees, etc.) in the schooling decisions of foreign students has the further important implication that foreign student demands are likely to be much more price-responsive (price-elastic) than the demands of domestic students. It is because of this higher price responsiveness that achievement of optimal institutional pricing (effective price discrimination with prices equal to marginal costs for those students who would not otherwise attend) is of especially great significance. If foreign student enrollments were unresponsive to institutional prices, then prices would have no significance. Moreover, pursuit of a policy of price discrimination would eventuate in lower prices confronting those whose demands are more price elastic, in this case foreign students by comparison to their domestic counterparts. The fact that prices paid by foreign students would be less than those paid by domestic students would

indicate not institutional favoritism toward foreign students but a rational (profit-maximizing) institutional response to the differentially high price elasticity of foreign student demands.

The foregoing discussion has focused on education decisions of individual foreign students. It is important to recognize, however, that a significant proportion of foreign students are supported by third parties (e.g., governmental or eleemosynary organizations), which also exert a strong influence on the specific study (field, institution, etc.) undertaken by the sponsored foreign student. This component of demand, driven by third-party (sponsoring-agency) decisions, is likely to be reflected in patterns of demand for fields and levels of study which differ most from those of U.S. students. Essentially, third-party demand patterns will be oriented to the perceived "needs" of the country of origin but may differ from those of nonsponsored foreign students intending to return to the country of origin primarily in the weight placed on nonmarket aspects of postschooling activity. Thus, while the labor market in the country of origin may place a low value on secondary school teaching or the provision of agricultural extension services, third-party agencies with access to resources to support foreign study may value these activities much more highly, leading them to provide support for the upgrading of skills in these fields.

The number of foreign students who are "sponsored" is considerably smaller than the number of those whose foreign study is supported by private resources and until recently, at least, sponsored students have been predominantly graduate students. Little is known as yet about the extent to which the study abroad choices made by sponsoring agencies are redundant with those made by individuals, but insofar as they place greater emphasis on nonmarket aspects of eventual employment, they may well be countercyclical in terms of educational demand and thus play a stabilizing role in U.S. higher education.

A final observation with reference to third-party demands for U.S. education of foreign students is that the sponsoring agencies will generally be subject to fixed budget constraints; given a budget, the number of students which can be supported will depend upon an agency's costs per student. If an agency were committed to expend that budget at a specific educational institution, then the institution would have no incentive to reduce prices; in fact, these agencies are responsive to interinstitutional price differentials, creating an incentive for institutions to offer preferential pricing to these agencies.

In summary, at the undergraduate level foreign student demands, sponsored and unsponsored, are likely to be highly responsive to prices (tuition and fees), as a result of which institutional pricing policies become especially significant. In a context of substantial excess capacities and of relatively price inelastic domestic demands, institutions have strong justifications for engaging in discriminatory pricing favorable to foreign students and their sponsors.

5. Conclusion

In light of the contemporary state of U.S. higher education, a very strong argument can be made that foreign students, graduate and undergraduate, contribute quite significantly to the stabilization of the system. Foreign graduate students constitute a highly elastic source of talent to a sector relatively starved of domestic talent, contributing to the effectiveness of the research enterprise, to the supply of undergraduate education and eventually to the augmentation of the supply of faculty.

Because of the existence of significant excess capacities at the undergraduate level, the marginal costs of foreign students will generally be relatively low, while foreign student demands will be relatively more price sensitive than those of domestic students. Under these circumstances, resources available to the sector can be enlarged through recourse to pricing policies favorable to foreign students. However, it must be emphasized that this is the result of specific prevailing conditions, especially contracting domestic enrollment and relatively fixed sectoral capacity, with the latter attributable to the inability of the sector to contract the faculty cadre. As these conditions change, either as a result of domestic enrollment growth or (more immediately) as a result of the eventual contraction of capacity (specifically through death and retirement of faculty), very different policies may become appropriate, at least from the self-interested perspective of U.S. colleges and universities.

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